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EXO-200 and nEXO

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nEXO is a proposed next generation neutrinoless double beta decay experiment with a design sensitivity for the half-life of ^{136}Xe neutrinoless double beta decay of $\sim 10^{28}$ yr. The single-phase isotopically enriched liquid xenon time projection chamber design is based on the success of the EXO-200 experiment, which completed its physics run in 2018 with a total exposure of 234.1 kg yr. EXO-200 demonstrated ultra-low background construction techniques, good energy resolution, and excellent background discrimination based on multi-parameter measurements of events, enhanced through machine learning techniques. EXO-200 achieved a sensitivity of 5.0×10^{25} yr and a limit on the half-life of ^{136}Xe neutrinoless double beta decay of 3.5×10^{25} yr at 90% confidence level. Scaling up from the 200 kg EXO-200 to the 5 tonne nEXO detector will significantly increase the source mass as well as improve background discrimination through the monolithic detector design.

¹for the EXO-200 and nEXO Collaborations